

MATH F113X: Homework 3

- Answer the following problems from the Weighted Voting section (p.70):
12, 14, 25, 26, 29*
- Answer the following problems from the Fair Division section (p. 108):
A, 4

* For #29, you only need to do the first part of this problem which asks you to construct a weighted voting scheme that has the desired properties. You do not have to calculate the Banzhaf Power Index for it. However, a BPI is provided for those who are curious.

Problem A: Ahmed, Emily, Tiana, and Levi buy a large pizza for \$24. It is half pepperoni and half veggie and cut into 8 slices.

- a. Suppose Ahmed doesn't care whether the slice is pepperoni or veggie. What is the value a slice of veggie for Ahmed?
- b. Suppose Emily doesn't eat meat of any kind. What is the value a slice of veggie for Emily? What is the value a slice of pepperoni for Emily?
- c. Suppose Tiana values a slice of pepperoni twice as much as a slice of veggie. What is the value a slice of veggie for Tiana? What is the value a slice of pepperoni for Tiana?
- d. Are two slices of veggie a fair share for Tiana? Justify your answer.
- e. Are two slices of veggie a fair share for Emily? Justify your answer.

Remember to write up your homework solutions according to the homework writeup guidelines. Confirm your work is correct or fix your errors before you submit it. Homework must be submitted on Gradescope.

Rubric:

2 points: You provided a complete answer, with supporting work, written up clearly

1 point: Some attempt at a solution, but incomplete writeup / unclear / illegible / no answer

1 point: Only an answer, with no supporting work

0 points: Missing.